CLAIMS

We claim:

1. A process for simultaneously producing a plurality of light-emitting diode light sources of the same kind, each comprising a light-emitting diode chip and a luminescence conversion element, which converts the wavelength of at least part of an electromagnetic radiation emitted by the light-emitting diode chip, wherein the process comprises:

providing a layer composite with a light-emitting diode layer sequence applied to a carrier substrate for the plurality of light-emitting diode chips;

producing a plurality of trenches in the layer composite,

inserting the layer composite into a cavity of a mold,

driving a molding compound, containing a luminescence conversion material, into the cavity in such a way that the trenches are at least partly filled with the molding compound,

removing the mold, and

separating the light-emitting diode light sources from the layer composite.

2. A process for simultaneously producing a plurality of light-emitting diode light sources of the same kind, each comprising a light-emitting diode chip and a luminescence conversion element, which converts the wavelength of at least part of an electromagnetic radiation emitted by the light-emitting diode chip, wherein the process comprises:

providing a plurality of light-emitting diode chips, which are applied to a common carrier in a regular arrangement;

inserting the light-emitting diode chips into a cavity of a mold,

driving a molding compound, containing a luminescence conversion material, into the cavity in such a way that free space of the cavity is at least partly filled with the molding compound,

removing the mold, and

separating the light-emitting diode light sources.

3. The process as claimed in claim 1, in which the layer composite is a wafer composite of light-emitting diode chips.

4. The process as claimed in claim 1, in which the trenches are formed along dividing lines between regions of adjacent light-emitting diode chips in the layer composite.

5. The process as claimed in claim 1, in which the trenches are produced by sawing.

6. The process as claimed in claims 1, in which the inner walls of at least some of the trenches are formed in such a way that parts of the bottom surfaces do not run parallel with, and/or parts of the side walls do not run at right angles to, front or rear surfaces of the light-emitting diode chips.

7. The process as claimed in claim 1, in which bottom surfaces of at least some of the trenches are formed so as to be V-shaped, convex, concave or stepped, and at least part of the light is coupled out of the light-emitting diode chips via the bottom surfaces of the trenches.

8. The process as claimed in claim 2, in which the carrier is flexible.

9. The process as claimed in claim 2, in which side flanks of at least some light-emitting diode chips are formed in such a way that parts of them do not run at right angles to front or rear surface of the light-emitting diode chips.

10. The process as claimed in claim 2, in which the side flanks of at least some of the light-emitting diode chips are formed in such a way that parts of them run obliquely with respect to the perpendicular to front or rear surfaces of the light-emitting diode chips, curved or stepped.

11. The process as claimed in claim 1 or 2, in which the molding compound is a transfer molding compound and the mold is a transfer mold.

12. The process as claimed in claim 1 or 2, in which the light-emitting diode chips and/or the light-emitting diode light sources are separated by sawing.

13. The process as claimed in claim 1 or 2, in which the cavity is formed in such a way that the inner walls of the mold rest on the front and the rear of the layer composite respectively the chips.

14. The process as claimed in claim 1 or 2, in which the layer composite is inserted into the cavity in such a way that it rests with the rear on the inner wall of the mold.

15. The process as claimed in claim 1 or 2, in which the layer composite has electrical contact areas on the front side, to which, before the insertion of the layer composite into the cavity, an electrical connecting material with an approximately constant height is applied.

16. The process as claimed in claim 1 or 2, in which molding compound by which electrical contacts are covered is removed by thinning, at least until the electrical connecting material is exposed.

17. The process as claimed in claim 15, in which molding compound applied to the front is thinned at least until covered electrical connecting material is exposed, and in which the color locus (CIE color chart) of the light-emitting diode light sources is measured repeatedly and thus set specifically by means of further thinning.

18. The process as claimed in claim 1 or 2, in which electrical contact areas of the layer composite or of the light-emitting diode chips are sealed off before they are inserted into the cavity and exposed again before being separated.

19. The process as claimed in claim 18, in which the electrical contact areas are sealed off by means of films, which are applied to the front and/or rear surface of the layer composite respectively the light-emitting diode chips.

20. The process as claimed in claim 18, in which the electrical contact areas of the chips are sealed off by a front and/or rear inner wall of the mold, which comprises part plates fitted such that they can move, which are pressed individually against the front and/or rear of the layer composite or the light-emitting diode chips.

21. The process as claimed in claim 1 or 2, in which the position and color locus of the light-emitting diode light sources are subsequently determined and registered and the light-emitting diode light sources are subsequently sorted in accordance with their color locus.

22. A component comprising at least one light-emitting diode light source which is produced in accordance with one of the processes as claimed in claim 1 or 2, in which the light-emitting diode light sources are mounted on a leadframe and subsequently encapsulated in a translucent or transparent material.

23. A component comprising at least one light-emitting diode light source which is produced in accordance with one of the processes as claimed in claim 1 or 2, in which the light-emitting diode light sources are mounted on a pre-housed leadframe and covered with a translucent or transparent potting compound.

24. The process as claimed in claim 1 or 2, in which the light-emitting diode chips are inserted into the cavity in such a way that they rest with the rear on the inner wall of the mold.

25. The process as claimed in claim 1 or 2, in which the light-emitting diode chips have electrical contact areas on the front side, to which, before the insertion of the layer composite or the light-emitting diode chips into the cavity, an electrical connecting material with an approximately constant height is applied.